State of California — The Resources Agency
DEPARTMENT OF PARKS AND RECREATION

# PRIMARY RECORD

Primary #_____
HRI #_____
Trinomial_____
NRHP Status Code_____
Other Listings_____
Review Code_____ Reviewer_____ Date_____

 **Resource name(s) or number**(assigned by recorder) N-227B

**P1. Other Identifier:** 9' X7' Supersonic Wind Tunnel, Unitary Plan Wind Tunnel
***P2. Location:** ☒Not for Publication ☐Unrestricted ***a. County** Santa Clara
***b. USGS 7.5' Quad** San Francisco North, Calif. **Date:** 1995
***c. Address** 335 Boyd Road **City** Moffett Field **Zip** 94035
***e. Other Locational Data:**

***P3a. Description:** (Describe resource and its major elements. Include design, materials, condition, alterations, size, setting, and boundaries.) N-227B is connected to the west side of Building N-227 and provides the connnection to the 9' x 7' Wind Tunnel. The street façade of N-227B is unpainted concrete and two stories in height. Ribbon windows on the street façade run along the first floor and align with the windows of N-227. Except for the street façade, the remainder of the building is clad with standing seam metal panels and is three stories in height to accommodate the wind tunnel. The roof is flat and the rear part of the building is utilitarian in style.

For technical description, see Continuation Sheets. Also refer to DPR 523 Form A for Buildings N-227, N-227B and N-227C.

This building appears to be in good condition.

***P3b. Resource Attributes:** (list attributes and codes) HP 39 – Other (Wind Tunnel)

***P4. Resources Present:** ☒Building ☐Structure ☐Object ☐Site ☐District ☐Element of District ☐Other

P5a. Photo

**P5b. Photo:** (view and date)
View of northwest façade, (8/12/05)

***P6. Date Constructed/Age and Sources:** 1955

***P7. Owner and Address:**
United States of America as represented by National Aeronautics and Space Administration (NASA)

***P8. Recorded by:**
Page & Turnbull, Inc.
724 Pine Street
San Francisco, CA 94108

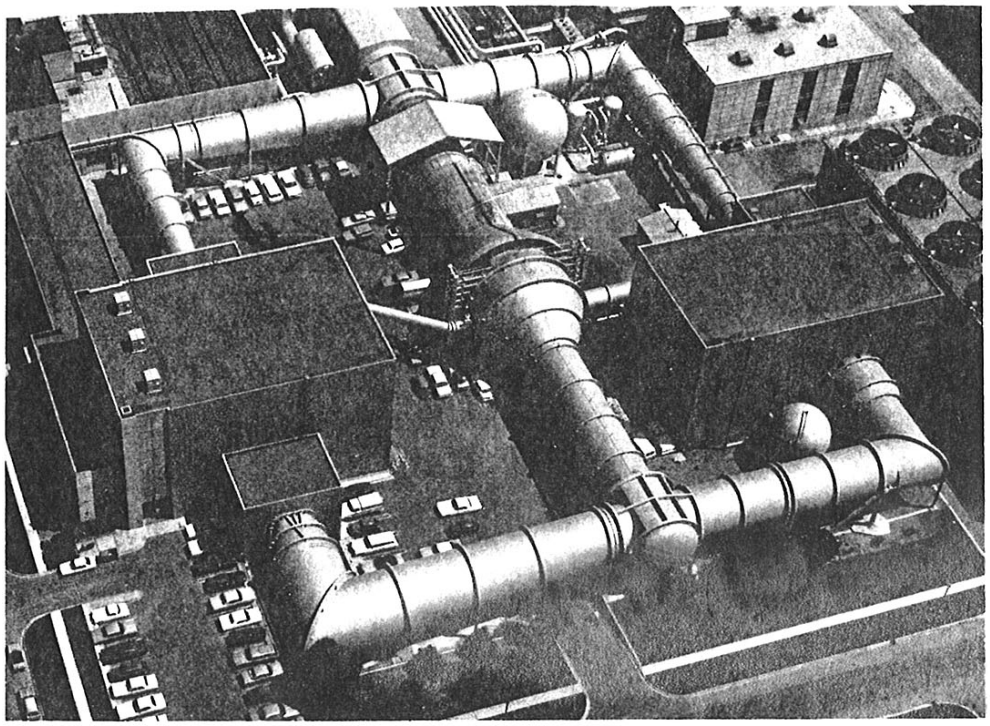
***P9. Date Recorded:** 08/12/05

***P10. Survey Type:**
Reconnaissance

***P11. Report Citation:** National Aeronautics and Space Administration, *Technical Facilities Catalog*, Volume 1, publication NHB 8800.5A (1), October 1974;Technical Information Division, Ames Research Center, *Ames Research Facilities Summary,* 1974; Donald D. Baals and William R. Corliss, *Wind Tunnels of NASA,* NASA SP-440, 1981.

***Attachments:** ☐None ☐Location Map ☐Sketch Map ☒Continuation Sheet ☐Building, Structure, and Object Record ☐Archaeological Record ☐District Record ☐Linear Feature Record ☐Milling Station Record ☐Rock Art Record ☐Artifact Record ☐Photograph Record ☐ Other (list)

N 227B



DESCRIPTION

The 9-ft x 7-ft supersonic wind tunnel is a closed-return, variable-density tunnel with a 9-ft x 7-ft rectangular test section. The nozzle is an asymmetric, sliding-block-type in which the variation of the test section Mach number is achieved by translating, in the streamwise direction, the fixed-contour block that forms the floor of the nozzle. The air is driven by an 11-stage, axial-flow compressor powered by 4 wound-rotor induction motors. The same motors and compressor serve the 8-ft by 7-ft supersonic wind tunnel. (See the following resume.) The speed of the motors is continuously variable over the operating range. The motors have a combined output of 180,000 hp for continuous operation, or 216,000 hp for one hr.

CHARACTERISTICS

| | |
|---|---|
| Mach Number: | 1.55 to 2.5, continuously variable |
| Reynolds Number, per ft: | $1.5 \times 10^6$ to $6.5 \times 10^6$ |
| Stagnation Pressure, atm: | 0.3 to 2.0 |
| Stagnation Temperature: | 580°R |
| Test-Section Height, ft: | 7.0 |
| Test-Section Width, ft: | 9.0 |
| Test-Section Length, ft: | 18.0 |
| Test-Section Access, ft: | Top Access Hatch: 6.0 wide x 9.0 long<br>Side Access Door: 3.0 wide x 6.5 high |

# 6b. NINE-BY SEVEN-FOOT SUPERSONIC WIND TUNNEL

**DESCRIPTION:**

The Nine- by Seven-Foot Supersonic Wind Tunnel is a closed-return, variable density tunnel equipped with an asymmetric, sliding-block nozzle and a flexible upper plate. Variation of the test section Mach number is achieved by translating, in the streamwise direction, the fixed contour block that forms the floor of the nozzle. Airflow is produced by an eleven-stage, axial-flow compressor powered by four variable-speed, wound-rotor induction motors.

For conventional, steady-state testing models are generally supported on a sting. Internal strain-gage balances are used for measuring forces and moments. (Additional facilities are available for measuring multiple steady or fluctuating pressures).

A schlieren system is available for studying flow patterns by direct viewing or photography, as well as a system for obtaining 20-by-20 inch shadowgraph negatives.

**PERFORMANCE:**

| | |
|---|---|
| Mach Number | 1.55 to 2.5 (continuously variable) |
| Stagnation Pressure | 0.3 to 2.0 atmospheres |
| Reynolds Number | $1.5 \times 10^6$ to $6.5 \times 10^6$ per foot |
| Stagnation Temperature | 580° R |

**DIMENSIONS: Test Section**

| | |
|---|---|
| Height | 7.0 feet |
| Width | 9.0 feet |
| Length | 18.0 feet |
| Access | Top hatch — 6.0 X 9.0 feet<br>Side door — 3.0 X 6.5 feet |

**STATUS:**

Operational since 1956

**JURISDICTION:**

Aeronautics Division
Experimental Investigations Branch
Stuart Treon

**LOCATION:**

Building N-227B